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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/118,833	07/20/98	NISHI	T 0965-0232P-S

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EXAMINER	
CREPEAU, J	
ART UNIT	**PAPER NUMBER**
1745	21

DATE MAILED: 10/26/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/118,833	Applicant(s) NISHI ET AL.	
	Examiner Jonathan S. Crepeau	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to the CPA filed May 10, 2001 and subsequent amendment filed August 7, 2001, and addresses existing claims 4-17 and new claims 18-20. All of the claims are newly rejected under 35 USC §112, second paragraph. Claims 4-11 remain rejected under 35 USC §103 over the Soma reference for the reasons of record. Additionally, claims 4-20 are newly rejected under 35 USC §103 over new art. This action is non-final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 4-17 all recite the phrase "solid electrolyte type," and claim 12 recites the phrase "co-sinter type." The term "type" is generally considered to be indefinite, and its use thereby renders the instant claims indefinite. Correction is required.

Claim Rejections - 35 USC § 103

4. Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soma et al (U.S. Pat. 5,411,767). Soma et al teach a solid electrolyte type fuel battery having an

interconnector comprising a material having the formula ABO_3, wherein A is preferably Ca, Ba, or Sr, and B is preferably Ti (see column 5, lines 13-38). In column 4, line 40 through column 5, line 12, a formula of $(La_{1-x}D_x)_{1-u}B_{1-w}O_3$ is taught, where D can be Ca, Sr, Ba, or nothing (when x = 0), and B can be Ti (+Mg, +Nb). Soma et al also teach the other elements of the fuel cell, i.e., the fuel electrode, air electrode, electrolyte, and substrate, in Figure 1.

The reference does not explicitly teach that the battery is co-sintered or that the interconnector is integrally burned within the battery, or that the current passage of the interconnector is current collection in the vertical direction. The reference further does not teach the same subscript ranges for the $(La_{1-x}D_x)_{1-u}B_{1-w}O_3$ compounds as recited in instant claims 6 or 8.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the direction of current collection is a design choice that may be manipulated according to the needs of the artisan. From Figs. 1 and 2 of the reference, it is apparent that current could be collected in the "vertical" direction. Even so, the "vertical direction" of the series-connected fuel cells may be an arbitrary direction, depending on the orientation of the fuel cells. Thus, the artisan may adjust the orientation of stack to suit a particular application, resulting in current collection in the "vertical" direction.

Regarding the subscript ranges of the $(La_{1-x}D_x)_{1-u}B_{1-w}O_3$ material, these ranges have not been shown to be critical variables in the practice of the invention. The claimed materials and prior art materials have substantially identical elemental compositions, and therefore could reasonably be expected to have similar properties. Applicant must show that the particular

subscript ranges are critical, generally by showing that the claimed ranges achieve unexpected results relative to the prior art ranges (*In re Woodruff*, 16 USPQ2d 1934).

Additionally, regarding the "co-sintered" and "integrally burned" limitations in the claims, these limitations are not considered to patentably distinguish over the Soma reference. These limitations are essentially process limitations, and therefore allow the claims to be interpreted as product-by-process claims. As set forth in MPEP §2113, once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

Response to Arguments

Applicant's arguments filed August 7, 2001 have been fully considered but they are not persuasive. Applicants allege that the present invention shows unexpected results over the prior art, which results are shown in the declaration filed on February 12, 2001 (paper #15). However, as stated in the Advisory Action of February 28, 2001 (paper #16), it is the Examiner's position that these results are not sufficient to establish the patentability of the instant claims over the Soma reference. The results on page 4 of the declaration are only shown for a prior art composition of lanthanum chromite. However, lanthanum chromite is not germane to the outstanding rejection over the Soma reference, as it is not recited in the instant claims. Applicants are encouraged to come forth with results comparing identical or otherwise highly similar materials (the materials being selected from those recited in the claims) using the process

of the invention (co-sintering) and the process of the prior art (plasma spraying). It is noted, however, that it remains unclear if fundamental economic differences between the two processes would be sufficient to establish unexpected results. If the prior art clearly suggests that an integral burning method is cost-effective, then results to this effect might not be considered to be unexpected. Note translated paragraph [0023] of JP 8-50913, cited herewith, which provides a teaching to this effect.

Finally, it is noted that claim 4 only recites that the interconnector is "produced by sintering" and not by co-sintering or integrally burning. The disclosure at column 2, line 36 of Soma et al., "the film is then heat-treated to form an interconnector," could be considered to meet this limitation, despite the fact that the film is plasma-sprayed first.

5. Claims 4-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 8-50913 in view of Soma et al.

In the abstract, JP 8-50913 teaches a method of making a solid oxide fuel cell comprising the step of integrally sintering (burning) an air electrode (23) and an interconnector (24), which together comprise a support tube (22). The fuel cell further comprises a fuel electrode (26) and an electrolyte (25). As shown in Figures 1 and 2, the interconnector is located at the top of the tube, thus providing for current collection in the "vertical" direction.

The Japanese reference does not expressly teach the material(s) which may comprise the interconnector.

As set forth in section 4 above, Soma et al. teach several species of perovskite materials which are not patentably distinct from the instantly claimed materials. In column 3, line 23, Soma et al. describe these materials as being "suitable for [an] interconnector."

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the courts have held that the selection of a known material based on its suitability for its intended use is *prima facie* obvious. See MPEP §2144.07. Accordingly, the artisan would be motivated to use the species disclosed by Soma in the interconnector of the Japanese reference.

Additionally, the recitation in instant claims 13, 15, and 17 that the electrodes, electrolyte, and interconnector are "laminated onto a substrate" is not seen to distinguish over the Japanese reference. As noted above, the reference identifies the combination of the air electrode and interconnector as a "support tube" (22), which itself functions as a substrate. Accordingly, it is seen that the "substrate" defined by the instant claims is integrally present in the fuel cell structure of the reference. Furthermore, it is noted that Soma et al. contemplate the interchangeability of a "true" substrate (3) and an "air electrode" substrate (13) in Figures 1 and 2 and in column 7, lines 3-10.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette, can be reached at (703) 308-0756. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-3599.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

October 24, 2001

GABRIELLE BROUILLETTE
SUPERVISORY PATENT EXAMINER
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